N69118.AR.001403
ST JULIENS CREEK
5090.3a

U S NAVY RESPONSE TO COMMENTS ON DRAFT EXPANDED SITE INSPECTION REPORT MUNITIONS RESPONSE PROGRAM AREA UNEXPLODED ORDNANCE 1 (UXO 1) ST JULIENS CREEK ANNEX VA

5/17/2013

CH2M HILL

Response to Comments
Draft Expanded Site Inspection Report
Munitions Response Program
Area UXO 1
St. Juliens Creek Annex
Chesapeake, Virginia

PREPARED FOR: Karen Doran, VDEQ
Krista Parra, NAVFAC Mid-Atlantic
Robert Stroud, EPA Region III

PREPARED BY: CH2M HILL

DATE: May 17, 2013

VDEQ provided initial comments on the Draft Expanded Site Inspection Report for Munitions Response Program Area UXO 1, St. Juliens Creek Annex on March 25, 2013. A response to those comments was provided to VDEQ on April 17, 2013. Additional comments were received from VDEQ on May 6, 2013. Responses to those outstanding comments are presented below.

General Comments

1. ***VDEQ Comment #1:*** Please indicate how the ecological risk PAL for 2,4,6-TNT of 0.13 was derived. It is not clarified in the SAP.

   Response (4/17/13): The value of 0.13 mg/kg was the fresh water ecological screening value from Talmage and Opresko, 1996. After further review of the Virginia Administrative Code, it has been determined that the Southern Branch of the Elizabeth River is defined as an estuarine water to which marine criteria should be applied, rather than fresh water. This determination was made from information contained within 9VAC25-260-410 and 9VAC25-260-140. The ESI Report has been revised to use the marine ecological screening value for explosives rather than the PAL in the SAP. The marine ecological screening value for 2,4,6-TNT is 20 mg/kg, which is based on the following document - Naval Facilities Engineering Command (NAVFAC). 2007. Ecological risk assessment Tier 1 screening, Supplemental RI at Operable Unit 2, Jackson Park Housing Complex/Naval Hospital Bremerton, Bremerton, Washington. Draft. April. This change is consistent with Worksheet #11 of the SAP, which indicates that evaluation of data may include alternate screening values and more realistic exposure scenarios.

   Use of the marine ecological screening values is also supported by historical salinity data collected within the Southern Branch of the Elizabeth River in the vicinity of Area UXO 1 in 2004 in association with the Blows Creek Baseline Ecological Risk Assessment. Salinity values ranged from 1.20% to 1.29%, which is indicative of a marine environment.

   VDEQ Response (5/6/13): Comment not resolved. The sediment screening benchmark in the report cited is actually 0.406 mg/kg as shown in Table 3-5 of the referenced report. This screening value also used site specific TOC data from the sediments in its derivation. There is some question as to whether the assumptions used in those calculations are appropriate to UXO 1. Are TOC data available for UXO 1? VDEQ

suggests that the team's toxicologists discuss this approach and its appropriateness before it is adapted for UXO 1. VDEQ will also need a copy of the final report cited in the RTC, since draft site-specific documents that have not received final regulatory approval will be difficult to accept as established precedent.

Response (5/14/13): The sediment screening benchmark was taken from Table 3-2, not Table 3-5, of the referenced report. The 20 mg/kg NOEC value was preferentially selected for this screening because it was developed based directly on the results of toxicity tests conducted with a benthic-dwelling marine amphipod (*Eohaustorius estuaries*). In contrast, the value presented in Table 3-5 represents a modeled concentration that is based on a freshwater toxicity concentration, as presented in Talmage et al. 1999. The original source of this value is: Rosen, G. and G. Lotufo. 2005. *Toxicity and Fate of Two Munitions Constituents in Spiked Sediment Exposures with the Marine Amphipod Eohaustorius Estuaries.* Environ. Tox. Chem. Vol. 24, No. 11, pp. 2887-2897. The document has been attached to this Response-to-Comments for your reference. The 20 mg/kg NOEC can be found in the table on the bottom of page 2893. NAVFAC and CH2M HILL are willing to discuss use of the marine screening values cited in the Expanded SI report with VDEQ toxicologists, potentially during the upcoming partnering meeting (Area UXO 1 topic scheduled 5/23/2013 at 11:25 AM).

TOC analyses were not performed during the 2012 Expanded SI. However, TOC analysis was performed near the northern portion of Area UXO 1 at the confluence of Blows Creek and the Southern Branch of the Elizabeth River in 2004 in association with the Blows Creek Baseline Ecological Risk Assessment. The TOC concentration of the three samples collected within the Southern Branch of the Elizabeth River furthest from the Blows Creek inlet ranged from 14,200 to 18,200 mg/kg.

2. ***VDEQ Comment #2:*** DEQ does not agree that NFA is appropriate regarding MC for the site at this time. The three detections of TNT were localized at samples 8, 9, and 10 which included one exceedance of the PAL and another detection just under it. Since sampling was performed by collecting sediment from debris extracted from the riverbed floor, it is difficult to know if these sediment data are representative of surface or subsurface conditions at the site. Given the localized detections around Wharf 1, there is significant potential for a more significant release than what has been detected. VDEQ requests additional characterization of the sediments surrounding Wharf 1 to determine if a release has occurred.

   ***Response (4/17/13)*:** As the Southern Branch of the Elizabeth River is defined as an estuarine water to which marine screening criteria are applicable, the concentrations of 2,4,6-TNT detected in site sediment (0.0998J mg/kg, 0.123J mg/kg, and 0.266J mg/kg) are approximately two orders of magnitude less than the ecological screening value of 20 mg/kg. The maximum hazard quotient for 2,4,6-TNT at the site is <0.1. Based on this revised ecological screening value, the 2,4,6-TNT concentrations detected at the site do not pose a potential risk to ecological receptors, and no additional site characterization is proposed in accordance with Worksheet #11 of the SAP ("If chemical concentrations in sediment are detected at concentrations that indicate the site does not pose a potential risk to human or ecological receptors, then analytical sampling can be discontinued.").

   VDEQ Response (5/6/13): Comment not resolved. See response to RTC #1.

Response (5/14/13): Please see the response to RTC #1.

Specific Comments

3. ***VDEQ Comment #3:*** Comment resolved.

4. ***VDEQ Comment #4:*** Comment resolved.

5. ***VDEQ Comment #5:*** Comment resolved. However, it is noted that there appear to be no sampling locations adjacent to the former northern wharf location where the DMM may actually have dropped. This concern is somewhat mitigated by the absence of DMM at locations adjacent to the southern wharf.

   Response (5/14/13): Comment noted.

6. ***VDEQ Comment #6:*** This comment has been resolved.

7. ***VDEQ Comment #7:*** Section 5 - Please include a discussion evaluating the investigation's ability to meet the DQOs identified in the SAP.

   Response (4/17/13)**:** As stated in Section 4 of the ESI Report, the site investigation was performed in accordance with the ESI work plan and the SAP. The investigation approach proposed within these documents was developed and approved by the partnering team to meet the project objectives stated within the SAP. No modifications to the text have been made in response to this comment.

   VDEQ Response (5/6/13): Comment not resolved. The approach used during the UXO 1 ESI is quite novel and has not yet been widely accepted by the regulatory community or even DoD. While the project team did develop and approve the work plan and SAP, the team has a responsibility to look at the work that was done and evaluate if the actions taken achieved the project goals. There have been many investigations, particularly MMRP investigations, where an approved plan has been written, approved, executed as planned, but DQOs were still not achieved based on a wide variety of factors. It should also be noted that the investigation was not conducted exactly as described in the work plan and SAP, as documented in Comment #5 and its response. Please include a section which evaluates the work performed and if the project DQOs were achieved.

   Response (5/14/13): Although DQOs were not established in the work plan or SAP, environmental questions to be answered by the investigation activities were defined in Worksheet #10 to achieve the project quality objectives identified as if/then statements in Worksheet #11. It is noted that the investigation was not conducted exactly as described in the work plan and SAP, as documented in Subsection 4.5 of the ESI Report. However, the deviations did not prevent answering the environmental questions for the ESI. In addition, the work plan QCP established definable features of work, audit procedures, QC frequency, pass/fail criteria, and actions if criteria are failed. Lastly, although the plans did not establish criteria to recover items of particular dimensions or weight, the various items that were recovered confirm that investigation technology could have recovered a variety of DMM, if present. Subsection 4.6, Quality Assurance and Quality Control, has been revised to provide more detail on the QC process and confirm no "fails" occurred. A qualitative statement regarding the electromagnet's capability of recovering DMM based on items recovered was added to Subsection 5.1. Section 6, Conclusions and Recommendations, has been revised to state each of the

environmental questions and discuss how each of the questions was answered through the ESI investigation, incorporating the field QC process and the qualitative evaluation of the equipment effectiveness.